

CLAIMS

1. A semiconductor assembly comprising:
 - a nitridation receptive material;
 - a nitridation resistive material; and
 - a silicon dioxide monolayer formed directly on said nitridation receptive material and said nitridation resistive material.
2. The semiconductor assembly as recited in claim 1, further comprising a nitride film provided over said monolayer.
3. The semiconductor assembly as recited in claim 1 wherein said nitridation receptive material is selected from the group consisting of polysilicon and hemispherical-grained (HSG) silicon.
4. The semiconductor assembly as recited in claim 1 wherein said nitridation resistive material is an insulative material selected from the group consisting of BoroPhosphoSilicate Glass (BPSG) and oxides.
5. A uniform dielectric film in a semiconductor assembly, comprising:
 - a nitridation receptive material;
 - a nitridation resistive material;
 - a silicon dioxide monolayer provided directly over said nitridation receptive material and said nitridation resistive material; and
 - a silicon nitride layer provided on said silicon dioxide monolayer, whereby said silicon dioxide monolayer provides for said silicon nitride layer to have a uniform thickness over said nitridation receptive material and said nitridation resistive material.

6. A storage capacitor comprising:
 - a bottom electrode comprising a nitridation receptive material;
 - an insulation material comprising a nitridation resistive material adjacent said bottom electrode;
 - a nucleation monolayer provided directly on said bottom electrode and said insulation material;
 - a dielectric layer provided directly on said monolayer, said dielectric film having a storage capacitor dielectric film; and
 - a top electrode provide over said storage capacitor dielectric film.
7. A uniform dielectric film in a semiconductor assembly comprising:
 - a silicon dioxide monolayer formed directly on a nitridation receptive material and a nitridation resistive material; and,
 - a silicon nitride layer formed directly on said silicon dioxide monolayer, said silicon dioxide monolayer providing for said silicon nitride layer to have a uniform thickness over said nitridation receptive material and said nitridation resistive material.
8. The uniform dielectric film in a semiconductor assembly as recited in claim 7, wherein said silicon nitride layer is oxidized.
9. The uniform dielectric film in a semiconductor assembly as recited in claim 7, wherein said silicon nitride layer and said silicon dioxide monolayer have a combined thickness 50Å or less.
10. The uniform dielectric film in a semiconductor assembly as recited in claim 7, wherein said silicon dioxide monolayer has a thickness about 2Å or less.
11. The uniform dielectric film in a semiconductor assembly as recited in claim 7, wherein said silicon dioxide monolayer and said nitride layer are formed insitu.

12. A uniform dielectric film for a memory device, comprising:
 - a silicon dioxide monolayer formed directly on at least one capacitor storage electrode and directly on an nitridation resistive material; and
 - a silicon nitride layer formed directly on said silicon dioxide monolayer, said silicon dioxide monolayer providing for said silicon nitride layer to have a uniform thickness over said capacitor storage electrode and said nitridation resistive material.
13. The uniform dielectric film in a semiconductor assembly as recited in claim 12, wherein said capacitor storage electrode is a material selected from polysilicon, hemispherical-grained silicon, and combinations thereof.
14. The uniform dielectric film in a semiconductor assembly as recited in claim 12, wherein said nitridation resistive material is any insulating material unreceptive to nitridation.
15. The uniform dielectric film in a semiconductor assembly as recited in claim 12, wherein said silicon nitride layer is oxidized.
16. The uniform dielectric film in a semiconductor assembly as recited in claim 12, wherein said silicon nitride layer and said silicon dioxide monolayer have a combined thickness 50Å or less.
17. The uniform dielectric film in a semiconductor assembly as recited in claim 12, wherein said silicon dioxide monolayer has a thickness about 2Å or less.
18. The uniform dielectric film in a semiconductor assembly as recited in claim 12, wherein said silicon dioxide monolayer and said nitride layer are formed insitu.

19. A semiconductor substrate having at least one storage capacitor, comprising:
- a bottom electrode;
 - an insulation material about said bottom electrode, said bottom electrode comprising a nitridation receptive material and said insulation material comprising a nitridation resistive material;
 - a nucleation monolayer on said bottom electrode and said insulation material;
 - a uniformly thick dielectric film layer on said monolayer; and
 - a top electrode on said storage capacitor dielectric film.
20. The semiconductor substrate as recited in claim 19, wherein said dielectric film layer and said monolayer of said storage capacitor have a combined thickness 50Å or less.
21. The semiconductor substrate as recited in claim 19, wherein said dielectric film layer of said storage capacitor comprises a material selected from silicon nitride and tantalum oxide .
22. The semiconductor substrate as recited in claim 19, wherein said nucleation monolayer of said storage capacitor comprises a single atomic layer of a material selected from silicon dioxide and tantalum.
23. The semiconductor substrate as recited in claim 19, wherein said nonconductive nucleation monolayer and said dielectric layer of said storage are performed insitu.
24. A semiconductor substrate comprising:
- a nitridation receptive material and a nitridation resistive material;
 - a conformal silicon dioxide monolayer provided to said nitridation receptive material and said nitridation resistive material via chemisorption; and
 - a uniformly thick dielectric compound on said monolayer.
25. The floating gate dielectric as recited in claim 24, wherein said dielectric comprises a material selected from silicon nitride and tantalum oxide.

26. The floating gate dielectric as recited in claim 24, wherein said monolayer comprises a material selected from silicon dioxide and tantalum.